Cucamonga Valley Water District

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50 Years of Service 1955 - 2005

Robert A. DeLoach
General Manager
Chief Executive Officer

January 16, 2006

State of California
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236

Re: Cucamonga Valley Water District's 2005 Urban Water Management Plan

A copy of the Cucamonga Valley Water District's 2005 Urban Water Management Plan was forwarded to you by letter dated January 4, 2006. Inadvertently, in the process of printing and assembling this document, pages 42 through 57 were left out of the report. Please have someone insert these pages at the end of the report. We apologize for any inconvenience this may cause you. Should you need any further information or have any questions, please contact me at (909) 987-2591.

Sincerely,

CUCAMONGA VALLEY WATER DISTRICT

Rita A. Kurth

Rita A. Kurth
Water Resource Administrator

c: Sergio Fierro, DWR Glendale

Analysis of Revenue Impacts of Reduced Sales during Shortages (continued)

Rate Stabilization

The District has a Rate Stabilization Fund as part of its Reserve Policy. The required fund balance is calculated based on the cost of purchasing up to 8,000 acre feet of imported water from the Metropolitan Water District. This funding source would generally be used to temporarily adjust for unexpected purchases of imported water or sudden unanticipated water supply cost increases. The Rate Stabilization Fund, currently funded at $2,880,000 is over 20% of the District's annual budgeted Source of Supply water cost. Any increases for extended period of time would be supplemented by a surcharge or penalty charged to customers who use excessive amounts of water as established by the District.

Draft Ordinance and Use Monitoring Procedure

Law

10632 (h) A draft water shortage contingency resolution or ordinance.
(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

Table 31
Water Use Monitoring Mechanisms

Mechanisms for determining actual reductions	Type data expected
Meter reads	Usage
Previous billing cycles usage	Comparison of usage
Previous billing cycles graph	Comparison of usage
Fixed Network Monitors	Daily usage
Fixed Network Monitors	Leak reports
Fixed Network Monitors	Higher than average usage

At the present time, the District is updating its Water Shortage Contingency Plan and it is expected to be adopted by the Board of Directors late 2005 or early 2006. Table 23 on page 32 lists the stages of actions in the District's Emergency Response Plan. These stages will become the basis for the District's Water Shortage Contingency Plan.

In order to determine actual reductions in usage, annual water production figures are compared with annual metered consumption. Metered consumption data are listed and graphed on customers' water bills. The graph provides a visual representation of the previous billings for the past year along with a list of the actual past water consumption.

The District is conducting a pilot study with fixed network monitors. This remote read system allows customer service staff to access daily usage data by wireless connection for accounts with the necessary equipment installed. The network provides constant availability of information and helps to identify leaks when higher than average usage is observed.

All of the above measures will be used jointly to determine actual reductions in water use. The District's Water Supply Planning Strategy establishes conservation as a component of the future water supply and having mechanisms in place for determining actual reductions will help achieve the District's conservation goals.

Recycled Water Plan

Law

10633 The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include the following:

Coordination

Table 32 Participating agencies	
	participated
Water agencies	2
Wastewater agencies	1
Groundwater agencies	1
Planning Agencies	1

Water Agencies: CVWD and IEUA
Wastewater Agencies: IEUA
Groundwater Agencies: Chino Basin Watermaster
Planning Agencies: City of Rancho Cucamonga

A Recycled Water Master Plan is currently being developed in conjunction with the agencies above.

Wastewater Quantity, Quality and Current Uses

Law

10633 (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

Inland Empire Utilities Agency manages the regional collection and treatment facilities within its 242-square mile service area in accordance with the provisions of a Regional Sewerage Contract. IEUA's facilities serve seven contracting agencies: the Cities of Chino, Chino Hills, Fontana, Montclair, Ontario, Upland and Cucamonga Valley Water District.

Table 33
Wastewater Collection and Treatment - AF Year

Type of Wastewater	2000	2005	2010	2015	2020	2025	2030 - opt
Wastewater collected & treated in service area	0	86,700	111,400	123,150	134,900	197,000	197,200
Volume that meets recycled water standard	0	86,700	111,400	123,150	134,900	197,200	197,200

Source: Inland Empire Utility Agency's 2005 Urban Water Management Plan

All of the tertiary treated effluent produced at Inland Empire Utilities Agency's treatment plants meets or exceeds the requirements of California Department of Health Services Title 22 for recycled water.

Table 34
Disposal of wastewater (non-recycled) AF Year

Method of disposal	Treatment Level	2005	2010	2015	2020	2025	2030 – opt
Discharge to Santa Ana River	Title 22	62,752	37,500	12,150	3,300	29,500	29,500
	Total	62,752	37,500	12,150	3,300	29,500	29,500

IEUA has a contractual obligation to discharge a minimum of 17,000 acre feet/year of recycled water to the Santa Ana River for use by Orange County as groundwater replenishment. The amount in Table 34 above represents the difference between produced water (see Table 34) minus 17,000 acre feet, minus the projected recycled water use in Table 35.

Wastewater Quantity, Quality and Current Use (continued)

Table 35
Recycled Water Uses - Actual and Potential (AFY)

User type	Treatment Level	2005	2010	2015	2020	2025	2030 - opt
Agriculture	Title 22	1,007	500	700	700	700	700
Landscape	Title 22	4,721	24,400	53,300	58,000	62,000	62,000
Wildlife Habitat	Title 22	0	0	0	0	0	0
Wetlands	Title 22	0	0	0	0	0	0
Industrial	Title 22	720	7,000	7,000	12,500	18,000	18,000
Groundwater Recharge	Title 22	500	25,000	33,000	50,000	70,000	70,000
	Total	6,948	56,900	94,000	121,200	150,700	150,700

Source: Inland Empire Utility Agency's 2005 Urban Water Management Plan

Table 36
Projected Future Use of Recycled Water in Service Area (AFY)

User type	2005	2010	2015	2020	2025	2030 – opt
Agriculture	0	0	0	0	0	0
Landscape	0	8,000	13,000	15,600	16,600	16,600
Wildlife Habitat	0	0	0	0	0	0
Wetlands	0	0	0	0	0	0
Industrial	0	2,256	2,918	3,624	5,000	5,000
Groundwater Recharge[1]	0	0	0	0	0	0
Total	0	10,256	15,918	19,224	21,600	21,600

Source: Inland Empire Utility Agency's 2005 Urban Water Management Plan
[1]Estimated breakout by user type. Figures do not include groundwater recharge. Chino Basin Watermaster controls the amount of groundwater recharge. Recycled water may not constitute more than 20% of recharged water.

Table 37
Recycled Water Uses - 2000 Projection compared with 2005 actual - AFY

User type	2000 Projection for 2005	2005 actual use
Agriculture		
Landscape		
Wildlife Habitat		
Wetlands		
Industrial		
Groundwater Recharge		
Total	4,000	0

At the time the 2000 Urban Water Management Plan was prepared, it was estimated that 4,000 acre feet/year of recycled water would be used in CVWD's service area. CVWD is dependent on IEUA for construction of the regional recycled water transmission mains to deliver recycled water from the regional wastewater treatment plants to CVWD. Construction of the first transmission line has been completed and the next phase of the regional facility is expected to be complete in late 2006.

Potential and Projected Use, Optimization Plan with Incentives

Law

10633 (d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, an other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.
(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre feet of recycled water used per year.
(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

Table 38
Methods to Encourage Recycled Water Use

Actions	AF of use projected to result from this action				
	2010	2015	2020	2025	2030 - opt
Financial incentives					
Reliability					
Total[1]	10,250	15,900	15,900	15,900	15,900

[1]There is no way to separate one incentive from the other. Both contribute to the total use of recycled water.

Cucamonga Valley Water District is working with potential recycled water customers by offering financial assistance for on-site retrofitting. In addition, the District has established a rate for recycled water equal to 75% of the potable water rate providing additional long-term financial incentives. In its communications with potential new customers, the District promotes recycled water as a safe, reliable, drought proof alternate to potable water for non-potable applications.

Water Quality Impacts on Reliability

Law

10634 The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Table 39
Current & projected water supply changes due to water quality - percentage

water source	2005	2010	2015	2020	2025	2030 - opt
District produced groundwater – Cucamonga Basin	0%	0%	0%	0%	0%	0%
District produced groundwater – Chino Basin	0%	0%	0%	0%	0%	0%
District produced surface water	0%	0%	0%	0%	0%	0%
Purchased from wholesale (Imported water from MWD)	0%	0%	0%	0%	0%	0%

The quality of each of CVWD's water sources is important in meeting future demands as outlined in Table 4. All water served to District customers meets or exceeds all standards established by Federal and State regulations. Regular water sampling is performed to ensure drinking water quality does not exceed Maximum Contaminant Levels (MCLs) allowed by regulation.

CVWD operates all the active wells in the Cucamonga Basin in accordance with a DHS-approved blending plan. Blending of these wells lowers the levels of nitrate and DBCP to comply with MCLs. Several wells are listed as "standby" sources due to high concentrations of nitrate and DBCP. It is not expected that there will be any change in the MCL for each of these contaminants, nor is it expected that concentrations will increase from current levels. If required to install well-head treatment, the District would install ion exchange and granular activated carbon which are the best available treatment technologies to treat these two contaminants. There would be minimal interruption in service to install well-head treatment and this source of water is projected to remain at 100% for future years.

The District's Chino Basin wells produce high quality drinking water and are considered a very reliable source of water. During the next 10 to 15 years, the District plans to drill five to ten new wells in the Chino Basin. This source of water is considered 100% reliable and no supply changes are anticipated due to water quality.

Local surface water supplies from our local canyons were impacted as a result of the Grand Prix fire in October 2003 and subsequent torrential rainstorms in December of that year. Huge debris flows blocked intake structures and in all but one location, District staff has been able to clear or reroute intakes. It is anticipated that the surface water supplies in the

Water Quality Impacts on Reliability (continued)

Cucamonga Canyon will be restored by August 2005 using grant funding provided by FEMA. As a result of the record rainfall in 2004-2005, 9.5% of the District's total water supply came from local surface water sources. This amount is twice what is usually produced from this source in average years. During significant storm events, surface water runoff turbidity temporarily spikes prohibiting the District's ability to use these sources and surface water flows are allowed to proceed downstream being captured for groundwater recharge. After flows recede to normal levels, they are returned to the District's collection system for treatment. Other than occasional spikes in turbidity during storms, no water quality problems have been experienced or are expected from this source. This supply is considered 100% reliable in terms of water quality.

Imported water purchased from Metropolitan Water District is treated at the Lloyd Michael Water Treatment Plant and has the lowest hardness, is low in TDS, and contains no DBCP or nitrates. The water, however, has a higher total trihalomethane (TTHM) formation potential than other water sources. The District meets all the requirements of the Interim Enhanced Surface Water Treatment Rule as well as the Stage 1 Disinfection/Disinfection By-Products (D/DBP) Rule. When the Stage 2 D/DBP Rule is finalized, the District will have two years to conduct and finalize an Initial Distribution System Evaluation to select new compliance monitoring sites that reflect the distribution system's highest TTHM and Haloacetic acid levels. When Stage 2 takes effect, monitoring locations will be based on the results of the system evaluation. In addition, treatment plant process modifications may be required in order to comply with Stage 2 D/DBP Rule.

With the future shift of the District's water production toward groundwater, the District's demand for imported water may be reduced slightly over time. In light of this reduced demand and of Metropolitan Water District's continuing diligence to secure adequate future imported water supplies to meet imported water delivery requirements, it is assumed that non-treated imported water will be 100% reliable to CVWD for the foreseeable future.

Water Service Reliability

Law

10635 (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water u se over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city of county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

Projected Normal Water Year Supply and Demand

Table 40
Projected Normal Water Supply – AF Year

(from table 4)	2010	2015	2020	2025	2030 - opt
Supply	84,470	96,780	103,750	106,130	106,130
% of Normal Year (from Table 8)	164.8%	188.9%	202.5%	207.1%	207.1%

Table 41
Projected Normal Water Demand – AF Year

(from table 15)	2010	2015	2020	2025	2030 - opt
Demand	65,400	72,500	79,500	86,000	86,000
% of year 2005	118.2%	131.0%	143.7%	155.5%	155.5%

Table 42
Projected Supply and Demand Comparison - AF Year

	2010	2015	2020	2025	2030 - opt
Supply totals	84,470	96,780	103,750	106,130	106,130
Demand totals	65,400	72,500	79,500	86,000	86,000
Difference	19,070	24,280	24,250	20,130	20,130
Difference as % of Supply	22.6%	25.1%	23.4%	19.0%	19.0%
Difference as % of Demand	29.2%	33.5%	30.5%	23.4%	23.4%

Water Supply Reliability (continued)

Projected Single-Dry-Year Supply and Demand Comparison

The following tables represent the supply, demand and supply/demand comparisons for single and multiple year drought scenarios for 2010, 2015, 2020, 2025 and 2030. The District is expected to meet 100% of its demand under every scenario.

Table 43
Projected single dry year Water Supply - AF Year

Supply	2010	2015	2020	2025	2030 - opt
Imported Water[1]	26,100	26,100	26,100	26,100	26,100
Groundwater - Chino Basin[2]	28,000	34,000	37,000	37,000	37,000
Dry Year Yield Program	2,430	2,430	2,430	2,430	2,430
Groundwater - Cucamonga Basin	5,400	5,400	5,400	5,400	5,400
Local Surface Water[3]	3,000	3,000	3,000	3,000	3,000
Conservation	6,390	7,050	7,700	7,700	7,700
Recycled Water[4]	10,256	15,918	19,224	21,600	21,600
Total Supply	81,576	93,898	100,854	103,230	103,230
% of projected normal	99.8%	97.0%	101.4%	102.8%	102.8%

[1]Imported water assumption – 90% of normal deliveries in a single dry year
[2]Groundwater assumption – 100% in a single dry year. Groundwater supplies do not include storm water or recycled water recharge. Chino Basin Watermaster controls the amount of groundwater recharge.
[3]Local surface water assumption – this is a conservative estimate of available supply
[4]Recycled water: Source: Inland Empire Utility Agency's 2005 Urban Water Management Plan. Figures do not include recharge. Recycled water may not constitute more than 20% of recharged water.

Table 44
Projected single dry year Water Demand - AF Year

Demand	2010	2015	2020	2025	2030 – opt
Single Family	36,964	40,782	44,543	48,303	48,303
Multi-family	4,632	5,110	5,582	6,052	6,052
Commercial	3,389	3,739	4,083	4,428	4,428
Industrial	3,700	4,082	4,458	4,835	4,835
Institutional/gov	1,412	1,558	1,702	1,845	1,845
Landscape	13,739	15,158	16,555	17,953	17,953
Agriculture	64	71	77	84	84
Total Demand[1]	63,900	70,500	77,000	83,500	83,500
% of projected normal	100%	100%	100%	100%	100%

[1]No reduction projected in a single dry year.

Table 45
Projected single dry year Supply and Demand Comparison - AF Year

	2010	2015	2020	2025	2030 - opt
Supply totals	81,576	93,898	100,854	103,230	103,230
Demand totals	63,900	70,500	77,000	83,500	83,500
Difference	17,676	23,398	23,854	19,730	19,730
Difference as % of Supply	21.7%	24.9%	23.7%	19.1%	19.1%
Difference as % of Demand	27.7%	33.2%	31.0%	23.6%	23.6%

Water Supply Reliability (continued)

Projected Multiple-Dry-Year Supply and Demand Comparison

Table 46
Projected supply during multiple dry year period ending in 2010 - AF Year

Supply	2006	2007	2008	2009	2010
Imported Water[1]	26,100	24,650	24,650	23,200	21,750
Groundwater - Chino Basin[2]	16,000	19,000	23,750	23,750	25,200
Dry Year Yield Program	2,430	2,430	2,430	2,430	2,430
Groundwater - Cucamonga Basin[2]	5,400	5,400	5,130	5,130	4,860
Local Surface Water[3]	3,000	3,000	2,850	2,850	2,700
Conservation	5,000	7,500	10,500	10,500	10,500
Recycled Water[4]	10,256	15,918	19,224	21,600	21,600
Total Supply	68,186	77,898	88,534	89,460	89,040
% of projected normal	111.0%	122.4%	131.6%	122.5%	112.4%

[1]Imported water assumption – 90% of normal deliveries in 1st dry year, 85% in 2nd and 3rd years, 80% in 4th year and 75% in 5th year
[2]Groundwater assumption – 100% in a 1st and 2nd dry year, 95% in 3rd and 4th years 90% in 5th year. Groundwater pumping is expected to increase over these five years. Groundwater supplies do not include storm water or recycled water recharge. Chino Basin Watermaster controls the amount of groundwater recharge.
[3]Local surface water assumption – this is a conservative estimate of available supply
[4]Recycled water: Source: Inland Empire Utility Agency's 2005 Urban Water Management Plan. Recycled water numbers do not include recharge. Recycled water may not constitute more than 20% of recharged water. No reduction in recycled water is projected.

According to the Report on Metropolitan's Water Supplies, A Blueprint for Reliability dated March 25, 2003, the State Water Project has historically provided from 25% to 50% of Metropolitan's supplies. Metropolitan and its member agencies have developed supply contingencies to protect the reliability of its entire system. MWD has been aggressively preparing for the Colorado River supply to be curtailed as a part of its long-term planning. Water transfer programs, outdoor conservation measures, development of additional local resources such as recycling, conjunctive use programs, brackish water desalination and seawater desalination, along with the storage in the Eastside Reservoir are part of the resources MWD has been expediting over the last five years. Because of these integrated resources, MWD expects to have a reliable water supply for the foreseeable future.

In multiple dry years, groundwater is a more reliable supply than imported water. Recycled water supplies will increase over the five dry years and will not be subject to cutbacks. The availability of local canyon supplies is determined by climate changes and precipitation. However, the estimate of local surface water available is conservative since improvements planned by the District will improve the capture of canyon runoff and the anticipated available supply is greater than projected. Conservation programs currently in place and future proposed programs are expected to continue to increase in efficacy over the five year period. The goal is to increase the rate of conservation to approximately 10% of the District's average water demand by the year 2010.

Table 46 above shows an increase in the District's supply over the five dry years due to construction of wells and repair of the local canyon facilities. While the future years indicate a decrease in supply, there is also a corresponding decrease in expected demand as shown on the comparison tables following each five-year period.

Water Supply Reliability (continued)

Projected Multiple-Dry-Year Supply and Demand Comparison

Table 47
Projected demand during multiple dry year period ending in 2010 - AF Year

Demand	2006	2007	2008	2009	2010
Single Family[1]	32,500	31,609	31,283	30,196	29,571
Multi-family[2]	4,046	4,157	4,114	3,971	4,169
Commercial[3]	2,934	3,086	3,054	2,948	3,050
Industrial[3]	3,205	3,370	3,335	3,333	3,330
Institutional/gov[3]	1,221	1,285	1,272	1,228	1,130
Landscape[4]	11,893	12,133	12,008	11,591	11,678
Agriculture[3]	57	60	59	59	58
Total Demand	55,856	55,700	55,125	53,326	52,985
% of projected normal	100%	93.0%	90.0%	85.0%	82.9%

[1]Single family demand reduction assumption - 0% 1st year, 7% 2nd year, 10% 3rd year, 15% 4th year, and 20% 5th year
[2]Multi-family demand reduction assumption - 0% 1st year, 2% 2nd year, 5% 3rd year, 10% 4th year, and 15% 5th year
[3]Commercial, Industrial, Inst./gov. and Agriculture demand reduction assumption – 0% 1st year, 2% 2nd year, 4% 3rd year, 7% 4th year and 10% 5th year
[4]Landscape demand reduction assumption – 0% 1st year, 5% 2nd year, 10% 3rd year, 15% 4th year and 20% 5th year

Table 48
Projected Supply & Demand Comparison during multiple dry year period ending in 2010 AF Year

	2006	2007	2008	2009	2010
Supply totals	68,186	77,898	88,534	89,460	89,040
Demand totals	55,856	55,700	55,125	53,326	52,985
Difference	12,330	22,198	33,409	36,134	36,055
Difference as % of Supply	18.1%	28.5%	37.7%	40.4%	40.5%
Difference as % of Demand	22.1%	39.9%	60.6%	67.8%	68.0%

Table 49
Projected supply during multiple dry year period ending in 2015 - AF Year

Supply	2011	2012	2013	2014	2015
Imported Water[1]	26,100	24,650	24,650	23,200	21,750
Groundwater – Chino Basin[2]	29,200	30,400	30,020	31,160	30,600
Dry Year Yield Program	2,430	2,430	2,430	2,430	2,430
Groundwater - Cucamonga Basin[2]	5,400	5,400	5,130	5,130	4,860
Local Surface Water[3]	3,000	3,000	2,850	2,850	2,700
Conservation	6,522	6,654	6,786	6,918	7,050
Recycled Water[4]	10,500	12,900	14,500	15,000	15,900
Total Supply	83,152	85,434	86,366	86,688	85,290
% of projected normal	95.7%	95.6%	94.0%	91.9%	88.1%

[1]Imported water assumption – 90% of normal deliveries in 1st dry year, 85% in 2nd and 3rd years, 80% in 4th year and 75% in 5th year
[2]Groundwater assumption – 100% in a 1st and 2nd dry year, 95% in 3rd and 4th years 90% in 5th year. Groundwater pumping is expected to increase over these five years. Groundwater supplies do not include storm water or recycled water recharge. Chino Basin Watermaster controls the amount of groundwater recharge.
[3]Local surface water assumption – this is a conservative estimate of available supply
[4]Recycled water: Source: Inland Empire Utility Agency's 2005 Urban Water Management Plan. Recycled water numbers do not include recharge. Recycled water may not constitute more than 20% of recharged water. No reduction in recycled water is projected.

Water Supply Reliability (continued)

Projected Multiple-Dry-Year Supply and Demand Comparison

Table 50
Projected demand during multiple dry year period ending in 2015 - AF Year

Demand	2011	2012	2013	2014	2015
Single Family[1]	37,727	35,796	35,329	34,015	32,626
Multi-family[2]	4,727	4,726	4,672	4,513	4,344
Commercial[3]	3,459	3,458	3,455	3,384	3,365
Industrial[3]	3,777	3,776	3,773	3,726	3,674
Institutional/gov[3]	1,445	1,442	1,440	1,422	1,402
Landscape[4]	14,022	13,591	13,131	12,643	12,126
Agriculture[3]	64	65	64	64	64
Total Demand	65,221	62,854	61,864	59,767	57,601
% of projected normal	100%	94.5%	91.2%	86.4%	81.7%

[1]Single family demand reduction assumption - 0% 1st year, 7% 2nd year, 10% 3rd year, 15% 4th year, and 20% 5th year
[2]Multi-family demand reduction assumption - 0% 1st year, 2% 2nd year, 5% 3rd year, 10% 4th year, and 15% 5th year
[3]Commercial, Industrial, Inst./gov. and Agriculture demand reduction assumption – 0% 1st year, 2% 2nd year, 4% 3rd year, 7% 4th year and 10% 5th year
[4]Landscape demand reduction assumption – 0% 1st year, 5% 2nd year, 10% 3rd year, 15% 4th year and 20% 5th year

Table 51
Projected Supply & Demand Comparison during multiple dry year period ending in 2015
AF Year

	2011	2012	2013	2014	2015
Supply totals	83,152	85,434	86,366	86,688	85,290
Demand totals	65,221	62,854	61,864	59,767	57,601
Difference	17,931	22,580	24,502	26,921	27,689
Difference as % of Supply	21.6%	26.4%	28.4%	31.1%	32.5%
Difference as % of Demand	27.5%	35.9%	39.6%	45.0%	48.1%

Table 52
Projected supply during multiple dry year period ending in 2020 - AF Year

Supply	2016	2017	2018	2019	2020
Imported Water[1]	26,100	24,650	24,650	23,200	21,750
Groundwater – Chino Basin[2]	34,600	34,000	33,440	34,010	33,300
Dry Year Yield Program	2,430	2,430	2,430	2,430	2,430
Groundwater - Cucamonga Basin[2]	5,400	5,400	5,130	5,130	4,860
Local Surface Water[3]	3,000	3,000	2,850	2,850	2,700
Conservation	7,180	7,310	7,440	7,570	7,700
Recycled Water[4]	16,564	17,228	17,892	18,556	19,220
Total Supply	95,274	94,618	93,832	93,746	91,960
% of projected normal	97.0%	95.0%	92.9%	91.6%	88.6%

[1]Imported water assumption – 90% of normal deliveries in 1st dry year, 85% in 2nd and 3rd years, 80% in 4th year and 75% in 5th year
[2]Groundwater assumption – 100% in a 1st and 2nd dry year, 95% in 3rd and 4th years 90% in 5th year. Groundwater pumping is expected to increase over these five years. Groundwater supplies do not include storm water or recycled water recharge. Chino Basin Watermaster controls the amount of groundwater recharge.
[3]Local surface water assumption – this is a conservative estimate of available supply
[4]Recycled water: Source: Inland Empire Utility Agency's 2005 Urban Water Management Plan. Recycled water numbers do not include recharge. Recycled water may not constitute more than 20% of recharged water. No reduction in recycled water is projected.

Water Supply Reliability (continued)

Projected Multiple-Dry-Year Supply and Demand Comparison

Table 53
Projected demand during multiple dry year period ending in 2020 - AF Year

Demand	2016	2017	2018	2019	2020
Single Family[1]	41,535	39,327	38,735	37,222	35,634
Multi-family[2]	5,206	5,194	5,124	4,939	4,747
Commercial[3]	3,807	3,797	3,786	3,738	3,675
Industrial[3]	4,158	4,148	4,136	4,076	4,012
Institutional/gov[3]	1,587	1,584	1,578	1,556	1,532
Landscape[4]	15,439	14,932	14,397	13,835	13,244
Agriculture[3]	72	72	71	70	70
Total Demand	71,804	69,054	67,827	65,436	62,914
% of projected normal	100%	94.5%	91.2%	86.4%	81.7%

[1]Single family demand reduction assumption - 0% 1st year, 7% 2nd year, 10% 3rd year, 15% 4th year, and 20% 5th year
[2]Multi-family demand reduction assumption - 0% 1st year, 2% 2nd year, 5% 3rd year, 10% 4th year, and 15% 5th year
[3]Commercial, Industrial, Inst./gov. and Agriculture demand reduction assumption – 0% 1st year, 2% 2nd year, 4% 3rd year, 7% 4th year and 10% 5th year
[4]Landscape demand reduction assumption – 0% 1st year, 5% 2nd year, 10% 3rd year, 15% 4th year and 20% 5th year

Table 54
Projected Supply & Demand Comparison during multiple dry year period ending in 2020
AF Year

	2016	2017	2018	2019	2020
Supply totals	95,274	94,618	93,832	93,746	91,960
Demand totals	71,804	69,054	67,827	65,436	62,914
Difference	23,470	25,564	26,005	28,310	29,046
Difference as % of Supply	24.6%	27.0%	27.7%	30.2%	31.6%
Difference as % of Demand	32.7%	37.0%	38.3%	43.3%	46.2%

Table 55
Projected supply during multiple dry year period ending in 2025 - AF Year

Supply	2021	2022	2023	2024	2025
Imported Water[1]	26,100	24,650	24,650	23,200	21,750
Groundwater - Chino Basin[2]	37,000	37,000	35,150	35,150	33,300
Dry Year Yield Program	2,430	2,430	2,430	2,430	2,430
Groundwater - Cucamonga Basin[2]	5,400	5,400	5,130	65,130	4,860
Local Surface Water[3]	3,000	3,000	2,850	2,850	2,700
Conservation	7,700	7,700	7,700	7,700	7,700
Recycled Water[4]	19,250	19,500	20,000	21,000	21,600
Total Supply	100,880	99,680	97,910	97,460	94,340
% of projected normal	96.8%	95.2%	93.1%	92.2%	88.9%

[1]Imported water assumption – 90% of normal deliveries in 1st dry year, 85% in 2nd and 3rd years, 80% in 4th year and 75% in 5th year
[2]Groundwater assumption – 100% in a 1st and 2nd dry year, 95% in 3rd and 4th years 90% in 5th year. Groundwater pumping is expected to increase over these five years. Groundwater supplies do not include storm water or recycled water recharge. Chino Basin Watermaster controls the amount of groundwater recharge.
[3]Local surface water assumption – this is a conservative estimate of available supply
[4]Recycled water: Source: Inland Empire Utility Agency's 2005 Urban Water Management Plan. Recycled water numbers do not include recharge. Recycled water may not constitute more than 20% of recharged water. No reduction in recycled water is projected.

Water Supply Reliability (continued)

Projected Multiple-Dry-Year Supply and Demand Comparison

Table 56
Projected demand during multiple dry year period ending in 2025 - AF Year

Demand	2021	2022	2023	2024	2025
Single Family[1]	45,295	42,824	42,119	40,418	38,642
Multi-family[2]	5,676	5,655	5,571	5,362	5,144
Commercial[3]	4,152	4,137	4,118	4,054	3,985
Industrial[3]	4,535	4,518	4,498	4,427	4,352
Institutional/gov[3]	1,730	1,723	1,716	1,689	1,661
Landscape[4]	16,834	16,257	15,654	15,022	14,362
Agriculture[3]	79	78	78	76	76
Total Demand	78,301	75,192	73,754	71,048	68,222
% of projected normal	100%	94.5%	91.2%	86.4%	81.7%

[1]Single family demand reduction assumption - 0% 1st year, 7% 2nd year, 10% 3rd year, 15% 4th year, and 20% 5th year
[2]Multi-family demand reduction assumption - 0% 1st year, 2% 2nd year, 5% 3rd year, 10% 4th year, and 15% 5th year
[3]Commercial, Industrial, Inst./gov. and Agriculture demand reduction assumption – 0% 1st year, 2% 2nd year, 4% 3rd year, 7% 4th year and 10% 5th year
[4]Landscape demand reduction assumption – 0% 1st year, 5% 2nd year, 10% 3rd year, 15% 4th year and 20% 5th year

Table 57
Projected Supply & Demand Comparison during multiple dry year period ending in 2025
AF Year

	2021	2022	2023	2024	2025
Supply totals	100,880	99,680	97,910	97,460	94,340
Demand totals	78,301	75,192	73,754	71,048	68,222
Difference	22,579	24,488	24,156	26,412	26,118
Difference as % of Supply	22.4%	24.6%	24.7%	27.1%	27.7%
Difference as % of Demand	28.8%	32.5%	32.8%	37.2%	38.3%

Table 58
Projected supply during multiple dry year period ending in 2030 - AF Year (OPTIONAL)

Supply	2026	2027	2028	2029	2030
Imported Water[1]	26,100	24,650	24,650	23,200	21,750
Groundwater - Chino Basin[2]	37,000	37,000	35,150	35,150	33,300
Dry Year Yield Program	2,430	2,430	2,430	2,430	2,430
Groundwater - Cucamonga Basin[2]	5,400	5,400	5,130	5,130	4,860
Local Surface Water[3]	3,000	3,000	2,850	2,850	2,700
Conservation	7,700	7,700	7,700	7,700	7,700
Recycled Water[4]	19,250	19,500	20,000	21,000	21,600
Total Supply	100,880	99,680	97,910	97,460	94,340
% of projected normal	96.8%	95.2%	93.1%	92.2%	88.9%

[1]Imported water assumption – 90% of normal deliveries in 1st dry year, 85% in 2nd and 3rd years, 80% in 4th year and 75% in 5th year
[2]Groundwater assumption – 100% in a 1st and 2nd dry year, 95% in 3rd and 4th years 90% in 5th year. Groundwater pumping is expected to increase over these five years. Groundwater supplies do not include storm water or recycled water recharge. Chino Basin Watermaster controls the amount of groundwater recharge.
[3]Local surface water assumption – this is a conservative estimate of available supply
[4]Recycled water: Source: Inland Empire Utility Agency's 2005 Urban Water Management Plan. Recycled water numbers do not include recharge. Recycled water may not constitute more than 20% of recharged water. No reduction in recycled water is projected.

Water Supply Reliability (continued)

Projected Multiple-Dry-Year Supply and Demand Comparison

Table 59
Projected demand during multiple dry year period ending in 2030 - AF Year (OPTIONAL)

Demand	2026	2027	2028	2029	2030
Single Family[1]	45,295	42,824	42,119	40,418	38,642
Multi-family[2]	5,676	5,655	5,571	5,362	5,144
Commercial[3]	4,152	4,137	4,118	4,054	3,985
Industrial[3]	4,535	4,518	4,498	4,427	4,352
Institutional/gov[3]	1,730	1,723	1,716	1,689	1,661
Landscape[4]	16,834	16,257	15,654	15,022	14362
Agriculture[3]	79	78	78	76	76
Total Demand	78,301	75,192	73,754	71,048	68,222
% of projected normal	100%	94.5%	91.2%	86.4%	81.7%

[1]Single family demand reduction assumption - 0% 1st year, 7% 2nd year, 10% 3rd year, 15% 4th year, and 20% 5th year
[2]Multi-family demand reduction assumption - 0% 1st year, 2% 2nd year, 5% 3rd year, 10% 4th year, and 15% 5th year
[3]Commercial, Industrial, Inst./gov. and Agriculture demand reduction assumption – 0% 1st year, 2% 2nd year, 4% 3rd year, 7% 4th year and 10% 5th year
[4]Landscape demand reduction assumption – 0% 1st year, 5% 2nd year, 10% 3rd year, 15% 4th year and 20% 5th year

Table 60
Projected Supply & Demand Comparison during multiple dry year period ending in 2030 AF Year (OPTIONAL)

	2026	2027	2028	2029	2030
Supply totals	100,880	99,680	97,910	97,460	94,340
Demand totals	78,301	75,192	73,754	71,048	68,222
Difference	22,579	24,488	24,156	26,412	26,118
Difference as % of Supply	22.4%	24.6%	24.7%	27.1%	27.7%
Difference as % of Demand	28.8%	32.6%	32.8%	37.2%	38.3%